ABBREVIATION

NPs Nanoparticles

AgNPs Silver nanoparticle

CuNPs Copper nanoparticles

c-AgNPs Curcumin functionalized silver nanoparticles

Ag-Cu BNPs Silver-Copper bimetallic nanoparticles

Cu@Ag NPs Copper core silver shell nanoparticles

Ag@Cu NPs Silver core copper shell nanoparticles

GO Graphene oxide

rGO Reduced graphene oxide

Ag/rGO Silver/reduced graphene oxide composite

Cu/rGO Copper/reduced graphene oxide composite

Ag-Cu/rGO Silver-Copper/reduced graphene oxide composite bimetallic

nanoparticles

PVP Polyvinylpyrollidone

EG Ethylene glycol

Gly Glycerol

NaBH₄ Sodium borohydride

NaOH Sodium hydroxide

HCl Hydrochloric acid

LSPR Localized surface plasmon resonance

BH4- Borohydride ion

Nip *p*-nitrophenol

AP *p*-aminophenol

MO Methyl orange

t time

 t_0 zero time

At Absorbance at time t

 A_0 Absorbance at time t_0

 t_{ind} Induction time

 k_{app} Apparent reaction rate constant

n order of reaction

TOF Turn over frequency (min⁻¹)

PTOF Photocatalytic turn over frequency (min⁻¹)

 $E_{\rm a}$ Activation energy (kJ mol⁻¹)

T Temperature

H₂O₂ Hydrogen Peroxide

UV-vis Ultra violet visible Spectroscopy

XRD X ray diffractometer

FWHM Full width half maximum

FT-IR Fourier transforms infrared spectroscopy

TEM Transmission electron microscopy

SEM Vibrating sample magnetometer

EDS Energy Dispersive X-ray Spectrometry